WASHINGTON STATE UNIVERSITY

EXTENSION OF AN EXISTING PROGRAM NOTIFICATION OF INTENT (LOCATION NOI)

Program Information

Program Name: Master of Science in Molecular Biosciences, Professional Science Masters Option

Institution Name: Washington State University

Degree Granting Unit: College of Sciences

Proposed Start Date: Fall 2010

Projected Enrollment (FTE) in Year One: 12.60 At Full Enrollment by Year Four: 85.05

Proposed New Funding: none

Funding Source: Fall and Spring – State Support; Summer – Self Support

Mode of Delivery / Locations

Distance Learning: Online, via Distance Degree Programs

Scheduling

Semester-based, Online

Attendance Options

☒ Full-Time ☒ Part-Time

Substantive Statement of Need

See attached

Contact Information (Academic Department Representative)

Name: Norah McCabe
Title: Clinical Associate Professor
School of Molecular Biosciences
Address: PO Box 647520
Pullman, WA 99164-7520
Telephone: 509-335-1134
Email: nrmccabe@wsu.edu

April 28, 2010

Endorsement by Chief Academic Officer Date

1. DESCRIPTION AND RATIONALE

Delivery Model:
The M.S. Molecular Biosciences currently is offered in Pullman as a degree with one thesis option and two non-thesis options, one of which is the Professional Science Master's (PSM) option. Approval of this proposal will make the non-thesis PSM option also available as an online program, in collaboration with the CDPE/DDP at WSU. Our proposal to offer an online version of this option is innovative in that no such program exists in the northwestern United States. In addition, the flexibility of choice between the online and on-campus versions will be such that it can be achieved on a full-time, one-year schedule of study or alternatively over a time frame that will suit the diverse student population that is currently pursuing such degrees nationwide.

Rationale for extending the degree: Professional Science Master's (PSM) degrees are innovative terminal graduate programs that typically consist of academic training in an emerging or interdisciplinary area of science, mathematics, or technology, and a professional component that may include internships and "cross-training" in business and communications. The PSM option is characterized by inclusion of professional courses that are absent from the traditional MS degree.

PSM degree programs were initiated in 1997 with, at present, 120 different programs offered in 50 different institutions in the nation. The current programs are localized in the eastern and southern parts of the US, with no online programs offered in the northwestern part of the country. The dearth of PSM programs in the states of Washington and Idaho is further compounded by the absence of such a program in Montana, Nevada, Alaska, and Wyoming. Therefore, this region is acutely underserved. To address this fact we are proposing to develop an online PSM degree option at WSU. This program will be supported by the nationally recognized Center for Distance and Professional Education (CDPE) that administers online degrees, so the expertise of offering online courses and degrees already exists at WSU. Currently only 7% of the PSM degree programs are offered online. The success of PSMs is that they all have been developed in concert with industry and are designed to dovetail into present and future professional career opportunities. Modern opportunities are seeking so called “T”-shaped as opposed to “I”-shaped individuals; individuals who are trained in more than one discipline, who are conversant in scientific and non-scientific fields and who transition into careers more efficiently and effectively.

This option within our Master’s degree program is designed to address the needs of many different audiences. Included in these are recent science graduates who wish to extend their education in both science and non-science fields so that they will have a competitive edge entering into their chosen career. The trend seen among recent science undergraduates is that they are looking for an edge with their undergraduate degree, with many of them obtaining double majors and double degrees. Many students are also taking courses in other disciplines so that they are more competitive for interdisciplinary type positions. In addition, mid-career professionals are seeking

advancement and enrichment in their current careers, late-career professionals want to branch out or better adapt to required areas of change in their dynamic careers and science teachers in the K-12 school systems are encouraged to pursue further education for both career promotion and compensation. Finally, professionals re-entering the workplace who need to earn a solid education in both the ever changing science and non-science fields given the ever global competitive work-place, will likely find the PSM option an excellent graduate degree choice.

The PSM option within the M.S. Molecular Biosciences is a non-thesis Master of Science degree that focuses on both course work and an internship within a research, business, agricultural or academic setting. The course work and internship require a partnership with a business/workplace, so this is designed to be a very flexible degree. The online version will serve those professionals who are already in careers who seek self-improvement and advancement in their established careers, and also entry-level employees who would benefit from taking specific courses to help them transition into their careers. Individuals earning this degree option will be proficient in both graduate science and professional course work. These proficiencies will allow graduates to interface science with business and will provide them with valuable skills for employability in the current competitive global market place.

Academic Partners -- As this is an interdisciplinary program, we have partnered with other academic units within WSU, including the College of Business and faculty from Statistics, Libraries, and Philosophy who are offering online courses as part of this degree program.

Business Partners -- Currently we have out-of-area support from Dr Lisa Shaffer, Signature Genomics, Spokane; Dr. Dan Roark from Matrical, Spokane; and Dr. Cory Gorman, DNA Bridges, San Francisco, California. In addition we have seven local Pullman/Moscow businesses who are interested in offering internships for PSM students. The partnership opportunities are nearly limitless, and we will continue to pursue them.

2. NEEDS ASSESSMENT

To verify that indeed there is a demand for an online PSM option, CDPE/DDP at WSU conducted a survey that reached 42% of WSU alumni from 1998 – 2007 asking about their interest in pursuing online degrees. Based on that study, 157 out of 1826 respondents stated that they had an interest in this offering. Had the survey reached all of the alumni, up to 300 respondents would likely have expressed interest in this program. The Middle Tennessee State Program went from 3 students to 60 in five years. The only thing that would limit the numbers is the cap on enrollments in each graduate course, which currently is at 20, but can be expanded if the need arises.

According to the National Professional Science Masters Association (NPSMA), the proportion of full-time students in PSM programs has dropped from 65% to 51% in just

one year, supporting the need for online programs to serve working adults. In addition, although 2,700 people have graduated with PSM degrees to date, approximately the same numbers of students are currently in PSM degree programs. According to projections from the NPSMA this number will likely increase by 25% over the next two to three years.

The National Professional Science Master's Association has provided the following information about as many of last year's graduates of PSM programs as their institutions were able to track:

Graduate Outcomes – 2008 – Existing PSM Programs

Discipline	Industry	Government	Further Study	Unknown or Other
Bioinformatics/Biotechnology	59%	7%	14%	20%
Microbiology/Cell and Molecular Biology	25%	0%	25%	50%
Financial Mathematics/Industrial Mathematics	71%	2%	10%	16%
Applied Statistics/Computational Science	55%	2%	4%	38%
Analytical Chemistry/Biochemistry/ Forensics	72%	22%	0%	6%
Food Safety/Pharmacology and Toxicology	0%	0%	0%	0%
Environmental and Geosciences	51%	28%	0%	21%
Applied/Industrial Physics	56%	11%	22%	11%
Health/Medical Physics	38%	16%	34%	13%
Total PSM Average	**55%**	**10%**	**14%**	**21%**

Numerous industry and business contacts have expressed enthusiasm for the program and are eager to work with WSU as it is developed. National interest is demonstrated by Congressional action that has allocated $15 million to the National Science Foundation specifically for PSM programs. Although not required for implementation, WSU has applied for a share of this funding in hopes of enhancing and expanding the program.

3. CURRICULUM

All required courses will be available online, and will be open to both online and on-site students, resulting in the additional option of a hybrid program for on-campus students. Content of required online courses will not change from on-site courses currently offered.

Online graduate courses are currently capped at 20 students, but capacity can be increased as the need arises. The program can be completed in three semesters of

full-time study or longer time periods for part-time students. The suggested schedule of courses is as follows, based on three semesters including one summer semester.

Semester 1		
MBioS 503	Molecular Biology I	3cr
MBioS 513	General Biochemistry I	3cr
Entr 486	Topics in New Venture Business Planning	3cr
Prof/Sci	Elective	2/3cr
Credits		11/12 credits
Semester 2		
MBioS 501	Cell Biology	3cr
MBioS 578	Bioinformatics	3cr
MBios 568	Advanced Topics in Molecular Biosciences (Scientific Information Literacy)	2cr
Phil 530	Bioethics	2cr
Credits		10 credits
Semester 3		
Prof/Sci	Elective	3cr
Prof/Sci	Elective	3cr
Internship		4cr
Credits		10 credits

Total 31/32 credits

4. RESOURCE ASSESSMENT

Faculty – The implementation of this new option will not require any new faculty or staff hires. The courses will be taught by current faculty and any additional teaching will be factored into their teaching load.

Staff – A full-time faculty member will serve as Program Director for this option, supported by a staff member.

Curriculum – All of the MBioS courses are already online or currently being developed, funded by the School of Molecular Biosciences, the College of Sciences and CDPE (DDP). The non-MBioS courses are also online or will be available online, some by Summer 2010, the rest by Spring 2011, and are being developed and have been funded by the respective colleges.

Library - The library resources required to support the M.S. Molecular Biosciences Professional Master's option, while significant, are already in place. For any distance

program, online access to the libraries collections is a convenient and efficient method of providing access to library materials. For serial collections the overwhelming majority of the Libraries subscriptions in the fields related to this program are to online journals. WSU Libraries' have current online access to a large proportion of the most cited journals in Molecular Biosciences.

While the majority of monographic materials are not available online, the WSU Libraries provide the request item service through the dedicated reference services to support distance students and subject specialist librarians on the Pullman Campus.

Student Services – The same student services infrastructure established for current DDP students will support students in the MS Molecular Biosciences program. DDP is nationally known for its excellent services to distance students, as the staff is often invited to give presentations at national conferences and webinars. Services include assistance with admissions, financial aid, registration, obtaining course materials, technical support, submitting assignments and take home exams, and proctored exams. In addition, DDP has a career counselor who works closely with students from admission through graduation, and beyond. DDP also has a liaison with the Disability Resource Center.

5. STUDENT LEARNING OUTCOMES – By carefully screening applicants, we aim to have 100% completion of the degree. For those students who are enrolled full time, we would like to see completion of study in a year or three semesters and for those in part-time enrollment, we anticipate completion in three years. Graduating students will achieve the same learning outcomes as on-campus students, in keeping with the Graduate Program in Molecular Biosciences Outcomes Assessment Mission Statement, Objectives, Learning Outcomes, and Assessment Plan.

6. DIVERSITY -- Based on data from the National Association (NPSMA), students who are currently enrolled in PSMs fall into the following categories: 66% are US Citizens and/ or permanent residents, 50% are women, and 10% are underrepresented minorities (African American, Hispanics, Native Americans). The College of Sciences and the School of Molecular Biosciences will follow the university guidelines for recruiting and retaining all students regardless of color, disability or gender. College and school faculty and staff, in collaboration with CDPE marketing staff, will make every effort to recruit students from underrepresented populations into the program.

7. FUNDING -- The Professional Science Master's option is a state-funded program during the academic year; summer courses are fee-based. The same funding model will apply to the DDP version of this option.

Table 1 lists the faculty who are involved with the graduate program and who teach the courses on campus. This faculty group is also involved in teaching the online courses. The table indicates the percentage of their time that will be allocated to the online courses and the online program.

Table 1 Program Faculty

Name	Rank	Status	% Effort in Pgm.
Dr. Eric Sheldon (SMB)	Associate Prof	COS	10%
Dr. Dan Mitchell (SMB)	Clinical Asst Prof	COS	10%
Dr. Carl Peters (SMB)	Clinical Asst Prof	COS	10%
Dr. John Wyrick (SMB)	Assoc Prof	COS	10%
Dr. Harris	Professor	CBE	10%
Dr. Bill Kabasenche	Asst Prof	CLA	10%
Dr. Norah McCabe	Clinical Assoc Prof	Director PSM	10%
Faculty for Electives*	Assoc Prof	CBE	5%
Faculty for Electives*	Professor	CLA	5%
Faculty for Electives*	Professor	COS	5%
Betty Galbraith	Inst Coord for Sci	Science Library	10%
Total Faculty FTE			85%

* Three electives, (minimum of one science and one professional and one other)

Table 2 lists the expected DDP enrollments in the courses. It is expected that the program will total 126 credit hours the first year, and double that the second year. It is expected to grow at the rate of about 50% for years 3 through 5. These estimates are based on 3 semesters per year - Fall, Spring, and Summer - with students taking an average of two years to complete the degree. It also assumes that students can enter the program in any semester.

Students	Year 1	Year 2	Year 3	Year 4	Year 5
Total student headcount	14	28	42	63	94.5
Total credits	126	252	378	567	850.5
FTE	12.60	25.20	37.80	56.70	85.05
AAFTE	6.30	12.60	18.90	28.35	42.53

Table 3 lists the administrative and support staff with the percentage effort in the program.

Table 3 Administrative/Support Staff			
Name	Title	Responsibilities	% Effort in Pgm.
Norah McCabe	Clinical Assoc Prof	Director	20%
Margie Kimball	Coordinator	Program Support Staff	50%
Total Staff FTE			70%

Table 4 shows that the cost per AAFTE is significantly reduced by Year 5 due to economies of scale.

Enter the name of the Degree program here		Internal Reallocation	New State Funds	Summer Funding	Year 1 Total	Year 5 Total
Administrative Salaries, including benefits		11,498	-	5,749	17,247	25,376
Faculty Salaries, including benefits		64,616	-	14,359	78,975	172,309
TA/RA Salaries including benefits		-	-	-	-	-
Clerical Salaries, including benefits		17,594	-	8,797	26,392	50,144
All DDP services except advising @ 80.00 per credit		6,720	-	3,360	10,080	68,040
Contract Services		-	-	-	-	-
Goods and Services		2,000	-	1,000	3,000	5,000
Travel		1,000	-	500	1,500	3,000
Equipment		1,500	-	500	2,000	4,000
Other costs		-	-	-	-	-
Library		-	-	-	-	-
Direct Cost		104,928	-	34,265	139,193	327,869
Indirect Cost		49,378	-	16,125	65,503	154,291
Total Cost		154,306	-	50,390	204,696	482,160
AAFTE					6.30	42.53
Cost Per AAFTE					32,491	11,338

*Rationale: It will take more resources per AAFTE to get the program started, but once started there are economies of scale that reduce the cost per AAFTE.